

AVIATION WEEK

A McGRAW-HILL PUBLICATION

MARCH 9, 1953

50 CENTS



AIR FORCE'S NEWEST MEDIUM BOMBER

Here's the RB-66, Douglas' new twin jet bomber which will be rolling off the line this year at the Douglas Long Beach, California, plant. It will carry a crew of three and is designed to be an extremely high performance aircraft capable of speeds in the 600-700 miles per hour range.

It's a source of considerable satisfaction to us at Honeywell that the Air Force and Douglas selected the remarkably sensitive E-11 Autopilot for the job of making flight on the RB-66 easier and more precise. It's a further source of satisfaction that the Honeywell electronic fuel measurement system, standard equipment on more than 40 types of military and commercial aircraft, was also chosen to provide accurate, dependable fuel measurement so vital to increased aircraft utility.

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FAST MILITARY PLANES could be forced off course by banking and turning if the air gap between aircraft and wing were reduced. Or a crash landing would result. But lead to other problems. It took so many turns to land the tail right that repair was a headache. Yet the tail had to be removable.

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B. F. Goodrich Pressure-Sealing Zippers fit neatly around complex shapes. They can be cemented onto the bottom of metal. They save space and weight. They have been used on airplane doors or floors, access covers and for weightless protective coverings.

The Boeing B-47, illustrated, is just one example to show addition and alternative uses of B. F. Goodrich pressure-sealing zippers. And others include the Convair B-36, Lockheed P-IV.

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WHO'S WHERE

In the Front Office

John D. Brown has been selected a vice president of Convair Wright Corp., heading the Air Force and Space Division; the Marine Corps is using helicopters, transports and jet fighters/bombers in its amphibious assault using modified aircraft built as offensive weapons. Marine believe vertical envelopment of a hostile beachhead by helicopters would be successful with offensive or defensive atomic weapons.

J. P. Donald George has been elected vice president and general manager of East Coast Aeronautics, Inc., Peabody, N. Y.

Bert C. Goss and Kenneth King have been appointed to the board of directors of Hill and Knowlton, Inc., New York.

Henry S. Kilday is the new executive vice president of Webster Inc., Newark, N. J. Also promoted recently by the research society manufacturer are George K. Leslie, vice president in charge of production, and John J. Phelan, vice president for engineering and sales.

Les S. Johnson has been appointed vice president of Avianetics and Jerry Eds. Deacon, Russell Manufacturing Co., Middlebury, Conn.

M. A. Kroll, former plant engineer at Aviation Propeller Corp., has been named vice president of Radial Engineering Co., Cincinnati.

Robert H. Wharton has been appointed manager to the president of Delta Air Lines.

Changes

Frederick E. Shaeffer has been promoted to executive director of Trans World Airlines.

Ronald W. Parke, a general manager of General Electric's recently acquired guided missile department, Schenectady, N. Y., and Fred E. Lee has been named to head GE's new missile products department, Princeton, N. J.

Charles D. Estes has joined Ryan Aeronautical Co., San Diego, as assistant director of engineering.

Patrick O. Shanahan has been appointed management director of Pan American World Airways' Latin American Department. Other TWA changes include Robert M. Adams, representative of the Biomassane Div. Inc.; Ronald W. Morris, chief pilot manager of the Pacific Shikra Division; and William F. Rivers, assistant to the Latin American Division manager.

Honors and Elections

J. H. Caudill, president of Capital Airlines, has been appointed to the industry consulting committee of the National Advisory Committee on Aeronautics.

Paul C. Chinn, James H. Williams, Frank E. Marshall and Ernest R. Seppelt, all of the College of Technology faculty, have been appointed to the National Advisory Committee on Aeronautics. Stated in NASA's special announcement on solid engines was Dr. A. L. Seppelt, chairman of the committee's jet propulsion laboratory.

John B. Clark, veteran aviation director at Northrop Aircraft, has been elected chairman of the industry's defense committee of aircraft industries. Am-

INDUSTRY OBSERVER

► Largest deployment of aircraft in theater weapons evaluation is now going on in the Caribbean at Vieques, Puerto Rico, where the Marine Corps is using helicopters, transports and jet fighters/bombers in its amphibious assault using modified aircraft built as offensive weapons. Marine believe vertical envelopment of a hostile beachhead by helicopters would be successful with offensive or defensive atomic weapons.

► An Mutual Command Headquarters is becoming concerned over the recruited services of investigative experts including blackmail or for information between employees of Air Force agents and subcontractor officials working on the provisions of Public Law 315, Section 51, Title 41, prohibiting non-disclosure or penalties to prime contractor employees from the subcontractor or government contracts, has been issued by AMC soon while it will be issued at the Chief of Staff's personal transport.

► Douglas C-118A formerly used as the Presidential transport "Independence" is being overhauled at Santa Monica and will be returned to USAF soon while it will be used at the Chief of Staff's personal transport.

► Lockheed Constellation now used as President Eisenhower's personal transport is a Model 747 formerly used by USAF Security Police. Before its USAF service, the plane was used by Lockheed Aircraft Service Corp. to maintain communications with Ireland. Airport in Ireland has operated the leased field for some time under military contract.

► Boeing has delivered the first of six Superfort piston-capable bombers. Total of 4,250 B-29 and B-50 aircraft was built by Boeing and its licensees during the last 10 years. Last Superfort delivered was a B-50H, bombardier navigator radio operator trainer.

► De Havilland has removed flight testing of its DH-110 night fighter for the first time since a prototype crashed at the 1952 SEAC Fair through shelling test pilot John Deny, his observer and 30 spectators.

► Vickers V-1000 jet transport is planned two versions: a derivative version of 180,000 lb. maximum gross, and an international version with 210,000 lb. Gross weight. Initial powerplants will be 9,900-lb thrust. Consists with an increase to 18,000 lb. thrust planned for later versions of this Rolls Royce engine. Airplane is being designed to accommodate engines delivering up to 15,000 lb. thrust and will incorporate leading edge auxiliary wing tanks similar to those on the Comet 3 to get a 5,000-mile range.

► Boeing's YF-52 is back at the plant for modifications at Seattle while the XE-52 test fleet continues in low flight mode. Indications are that the serial B-52 flight test program is well ahead of the canceled XB-47 flight test program in 1947.

► Trouble with an auto-shutoff wing switch on the Farnsworth Air Center Concor which made a safe emergency landing at Floyd Bennett Field, N. Y., recently was a factor in the flattening difficulties the airplane experienced. A three-position switch guard was used with a two-position switch. Kraft was that pilot turned the switch on when he thought it was turned off, which caused difficulty in engineers analyzing the accident. The airplane was flown to America's West Coast last at Tulsa for a complete service job as the primary concern. Original cause of truncated loss of power in the left engine, which resulted in pilot losing the feathering switch the first time, has not been learned. Nor has the switch switch installation been explained.

► Hughes Aircraft is now testing a new device that will hook the subspace directly with normal surface switching mechanisms on the North American F-86D and enable the switch to track down its targets automatically, using the human pilot only as a monitor of the results. The Lockheed F-94C also was drugged to perform target selection automatically.

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The Aviation Week

March 9, 1953

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AVIATION WEEK, March 9, 1953

NEWS DIGEST

Domestic

Shek Aeromarine DC-6A set a new nonstop coast-to-coast speed record for air freight last week, flying 3,575 mi from Los Angeles to New York in 7 hr, 45 min, at an average speed of 310 mph. The transport carried 27,000 lb of non-airfreight cargo.

Roger Lewis, sales manager for Curtiss-Wright Corp., was expected last week to be nominated for the remaining seat in American Air Security.

An Face Secretary Heidi Taftett is expected to arrive early this week to Washington after a quick trip to Korea to receive a briefing from USAMF field commanders on the combat situation preparatory to flying Congress on the AF budget for fiscal 1954.

Boeing C-97 modification as a hospital transport is being started by Trans Aircraft Corp. at its Grandview, Tex., overhead division, with a production order for conversion of a large fleet of C-97s to an evacuation configuration expected to follow the prototype. Trans, however, is changing its organization. No plans were made regarding future aircraft conversion work under a \$3.9-million contract with Riley Aircraft Manufacturing, Ft. Lauderdale, Fla.

Pasinski's TH-51A Work Blimp is undergoing tests at temperatures of -65 deg. in a refrigerated hangar at Eglin Air Force Base, Fla. The captor is scheduled to be tested by Air Reserve Service under actual polar conditions at the Arctic.

More than 4,000 workers are employed by Fairchild Aircraft Division in its Hagerstown, Md., plant, exceeding the World War II peak of 3,270.

Edward M. Seay, 53, member of the vice president of American Airlines, died Feb. 25 in San New York home.

Los Angeles International Airport has asked the Secretary of Treasury to designate it as a federal airport of entry, arguing that most foreign flights now enter through Los Angeles or obtain special permission to land.

Corporate Aircraft Owners Assn. board of directors may change the organization's name at its next meeting in Association of Business Aircraft.

Earl B. Orman, friend test pilot and unusual names competitor for the Na-



CHINAH HELICOPTER developed by Gyrodyne Co. of America is pictured during Nine flight tests, recently completed at the company's Mt. Jason, N. Y., helipad. It is built by Air Room Thompson Trophy, Ltd. at Miami, Fla., Feb. 27 of a basic aircraft.

Take W. Reddick, former Civil Aeronautics Board chairman, has organized the Texas Auto Transport Co. in Oklahoma City. He is president of the new firm.

Standard Aircraft Equipment Co., Minocqua, N. Y., received a Civil Aeronautics Board certificate last week to service all types of plane instruments and accessories, believed to be the first full-service point granted in the New York area under CAA's new repair station regulation.

Interstate passengers held last January through airline clearing house in Washington totaled \$33,455,323, a 26.5% increase over the same period last year.

Aircraft shipments in January totaled 375 one-in 10-place personnel and executive planes at an overall value of \$178,783,000, according to International Air Traffic Ass'n's clearing house in London—a 28% increase over 1951, IATA reports.

Civil aircraft exports added up to 24 planes in January 1953, declining from last year's average of 33 units per month.

Financial

Curtiss-Wright Corp. Wood Ridge, N. J., reported a net income for 1952 of

the first annual profit to pass work mill-type specifications. Net earnings for more than a year will be made available to the Air Force and Army.

\$9,047,514 from military and commercial unit sales totaling \$126,183,680, an increase of 85% over last year.

Colonial Airlines earned a net profit of \$12,000 during the last month of this year.

Northwest Airlines showed a net loss last January of \$321,394, operating expenses totalled \$4,269,001, compared with total operating revenues of \$4,583,105 and a tax adjustment credit of \$359,200.

New York Airways, Flushing, N. Y., recently had \$3,070,000 of previously unissued stock at \$11,100,000. The company had \$28,350 shares of capital stock outstanding as of Jan. 31.

Swiss Airlines receipts in 1952 add up to approximately \$15.5 million, according to the carrier's annual report.

International

Steady growth in a worldwide air traffic last year is reflected in a total of \$218,240,000 in international air traffic handled through International Air Traffic Ass'n's clearing house in London—a 28% increase over 1951, IATA reports.

Construction of a new following jet fighter, designed by Aero Comets, has opened up to 1,100 sq. in., is being designed with the Canadian government deciding whether to award \$105 million to a prototype and production of the aircraft.



Flying staff car

This rugged twin engine Beechcraft operated by the Army Ground Forces comes in, has a top speed of over 200 mph and a range of 1135 miles. It delivers the versatile, exceptionally dependable performance characteristic of Beech planes.

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LATEST VERSION OF CF-100—An early production Avro Canada CF-100 two-seat all weather fighter in the new MR. 4 configuration with blunt nose housing improved radar. Production models will be all rocket armed. Craft has been fired just Mach 1 in recent tests.

Foreign Aircraft News in Pictures



NEW FRENCH JET TRAINER—Mousso-Sudou M.S. 751 (above) made its first flight Jan. 29 near Paris. Featuring a T-tail, the craft seats two side-by-side and is powered by two Turbomeca Marboré 2 jets of 570 lb. thrust each. Gross weight is approximately 4,000 lb.

FOUGA MAGISTER ALOFT—The G.M. UNOR (below) is a single-seat French jet trainer featuring a large V-fin.

NEW SPANISH TRAINER—Pegaso 1215 (far left) is all wood and is powered by a Hispano engine. Top speed is 392 mph.



AVIATION WEEK

Washington Roundup

Money Developments

Funds for Air Force and Naval Aviation for the coming 1974 fiscal year face a rough road in Congress, according to administration sources.

• **Chairman John Tafel** of House Appropriations Committee, leading advocate of sharp cuts, has taken a firm hold on the Senate's budget committee. While supporting increases, he has tried a shift of \$3 to \$5 million between and accommodation experts to make it non-controversial. Their identity and activities are being kept secret, even from some committee members. But it is understood more have been stripped in the defense budget. Max Baucus, acting general manager of Appropriations Division of General Motors, is identified to me as one of the experts advised by Tafel.

• **Chairwoman Dewey Short**, with the support of her Armed Services Committee, is likely to hold the line against too-deep slashes in defense funds authorized from Appropriations Committee. Short commanded "Defense, the biggest issue in the federal budget, is going to have to take its share of cuts under the Republican economy program." She says she has a "soothed and cast it on." I don't see her doing it. The 1974 defense budget can possibly be cut below \$45 billion, and that is probably how much One percent more, including a 15% wing Air Force, may not be realistic.

• **Secretary of Defense Charles Wilson** generally is expected to support new funds proposed by Senator Frank Church's budget. It was drawn under the direction of Assistant Secretary W. J. McNeil, whom Wilson has retained on his team. Church requested new funds for USAF and Naval aircraft and related procurement of \$4.9 billion, compared with this year's \$15.5 billion.

• **Undersecretary Roger Kast** is working seriously to determine the advisability of further thresholds in military programs. These might lead to accommodations for a reduction in the \$9 billion expenditure for stealth programs in the current budget contemplated. Agreement of USAF and Navy against such a limit is that they increase war costs and delay achievement of necessary combat strength.

• **Democratic Rep. George Mahon**, former chairman of the Appropriations Subcommittee on Defense, also indicated that the military budget faces painful decisions. Tracing out that 60% of every military dollar goes in procurement, he concluded at a House speech that the new defense manual should not only be tightening on cost-cutting provisions and profits to business. He said:

"Too often in the past, combat fleet procurement estimates and funding requests have been given out and matching them with big business and the taxpayer has paid the penalty of increased costs. If the Wilson regimen will continue, and I think the signs of big trouble above down the pike, big manufacturers, I hope my colleagues they may have had to bow to congressional pressure to remove cost of government, the penalties for good management and cheaper defense costs should be bright."

Raising the Curtain

First breakthrough in the wall of silence at Defense Department since the new administration took over Jan. 20 will be a press conference by Secretary Wilson this week or next.

• Wilson is inclined to follow the example of the President and Secretary of State and hold regular weekly con-

ferences to keep the public informed and keep public support for defense activities. But, as a compromise, he has indicated he will hold conferences no later than weeks.

• Wilson also has taken the position that the defense secretary should have a sole role in expressing policy for their departments, even if it might be at odds with overall policy.

• Secretary for Air Marshal Talbot plans to start weekly press conferences shortly.

• Secretary for Navy Robert Anderson doesn't plan any news or other public exposition "for some time yet."

Subsidy Separation Law Out?

There's a strong move, supported by Air Transport Assn., to hold off consideration of legislation separating subsidy from annual pay.

This is the three-point airline position as outlined in a memo circulated among congressional sources:

• As in the past, the airlines' response to support "fair and equitable" subsidy separation legislation.

• But some Civil Aviation Board has completed no parts which show the amount of subsidy and the reason of said contribution is based on by individual carriers, as a general rule for both the executive branch of the government and the Congress to determine how much the airlines are being subsidized and how much they are actually paying for the carriage of mail and the long objective of subsidy separation legislation has been reached.

• This being the case, action on subsidy separation bills should be deferred until it appears that the Board's position do not adequately serve the purpose of subsidy separation.

Opposition comes from congressional who want CAA to have the chance each year to touch up money for airline subsidy. Legislation of the type sponsored by Sen. John Kennedy and Rep. John Bladon would make that possible. But the consensus is that this is not legal under the present system in which subsidy is apportioned as "earned pay."

Here and There

Senate Small Business Subcommittee has invited the Civil Aeronautics Board to a hearing Mar. 17 to ask Board members what they have done to keep airports in business. Members of the subcommittee include Sens. Edward T. Gurney, Robert Hruska, Charles Tobey, Lester Hunt, George Sartorius, Taft, Hunt and Smathers who are members of Senate Interstate Commerce Committee, with participation from congressional staff.

Single regulatory agency, as chairman of CAB and administrator of airline regulation to become Commerce Committee, would be to discuss now. Among other developments Eric Barthold and other railroads are breaking the long-time solid front of these three in face of the reorganization.

Using data, a study outlining government financing facilities for all types of transportation—roads, waterways, etc., as well as airways—will be submitted to the committee in Congress shortly. It will recommend a general policy for assuring uses of all types to maximize the government expenditures. This is the approach that has been urged by the air transport industry which has objected to being singled out for accountants.

—Katherine Johnson



Douglas XFD-1 SKYSTEAK, seen in new flight setup here and on page 14, is considered one of the most advanced interceptors. It has been officially described as supersonic, yet novel wing feature points short landing and takeoff. All-new delta-wing is visible.

Douglas Aircraft Backlog Tops \$2 Billion

• **Record military and commercial plane production, sales and profits push net worth to all-time peak.**

• **Supersonic A4D attack bomber design is well advanced, and \$1 million is spent for jet liner development.**

By Robert Flota

A record fourth year in sales, profit and production was reported by the Douglas Aircraft Co., Inc., for 1972 fiscal year ended last Nov. 30.

Net profit increased 63% to \$167,792,255 for an average of \$40.89 per share, compared with \$66,812,829 and 35.75 per share for 1971.

Stock increased by 13.2%, to \$325,449,908, compared to \$225,373,226 for 1971.

Douglas entered 1973 with a record backlog of orders and letters of intent of \$2,055 million. This compares with peak World War II backlog of \$3.8 billion announced late in 1943.

Among new developments revealed in the annual report were:

- USAF has ordered initial production of the supersonic B-65 bombers at the Tulsa plant.
- New transport-military transport (C-124) is under development.
- Special Skyraider (AD-4B) equipped

to deliver "special weapons," believed to be small atomic bombs, are being produced at El Segundo.

• Design of a new supersonic Navy anti-submarine (ASW) A4D is well advanced at the El Segundo plant, formerly known as

- X-3 research plane is the "world's first multi-carrying aircraft designed to take off under its own power and end its flight at prolonged supersonic speeds in level flight."
- More than 11 million sq. ft. of plant area are now encompassed in the Douglas division.

- Not worth of Douglas reached an all-time high of \$87,998,800 equivalent to \$73.35 per share of stock.
- \$1 million has been spent on developing a jet transport design.

- Southeastern Douglas whiteboards for 3rd generation fighters, president Donald W. Douglas told reporters recently that in "many respects the final AD-4 is not as advanced and highly advanced" and that "our productivity and profitability are industry improved."
- Entering 1973 Douglas had four op-

erating divisions—Santa Monica, El Segundo and Long Beach in California and Tulsa, Okla.—producing 34 distinct models of military aircraft and their types of transports for the commercial airline. About 13% of total Douglas sales for 1972 represented commercial business.

Douglas now has one of the most diversified production programs in the overall military confronting USAF, Navy and commercial customers.

Here is the 1973 Douglas production picture as of December:

• **El Segundo.** This division—with a partially-contracted force headed by general manager T. E. Springer and chief engineer E. M. Heisterkamp—has produced a brilliant array of Naval aircraft. Production manager Billie is the rugged Skyraider team, which has reached the AD-4 modification—a "closed up" version of the AD-4 also equipped with special gear for ground support work. Also in production is the AD-4B, a modification of the basic AD-4 equipped to carry "special weapons," a term generally used by the military to denote tactical "bomby" atomic bombs. It is believed that some AD-4s are already in service aboard Navy's larger carriers.

During 1973, this division will pursue jet auto production.

- **F4D.** A half-singed fighter design

New Prop Reversal Safeguard

American Airlines has established a three-phase program to solve one of the industry's most vexing problems.

By Alexander McSandy

Any U.S. airline experiencing problems that puts new safeguards to work is something the other carriers would envy.

But when American Airlines—United U.S. operator of postwar nonstop and four-engine flights—starts a "fix" program, other airline managers ought to follow its progress because of the misplaced confidence of American's management department under Wilson L. Littlefield, vice-president of engineering and chief engineer. Due Read.

Today American Airlines has been engaged in a three-year active program to prevent propeller reversals for more than a year. Studies previously undertaken were started on an emergency basis the morning after a National Airways DC-6 ended at Elizabeth, N.J., Feb. 11, 1952, in an accident attributed to propeller reversal. The passenger plane's 11 passengers and crew were killed, but other safeguards still are being installed.

When the program is finished within the next few months, it is hoped that subsequent accidents elsewhere will be about as remote a possibility as snowballs at the equator.

William L. Larson, engineer in charge of the program, outlines it like this:

Phase I—monitored fixes.

1. Incessive "feet envoys" have completed action to separate a last link to the system solution in a separate effort by the himself.

2. Indicators were provided that low-speed step lock failed in time to react before the engines, plus a device to check that caused the spring to fail. A tension spring was installed immediately.

3. Before the Elizabeth road, that company action already was underway to check that rigging by a electrical check in assembly.

Phase II—quick fixes.

1. Isolation of hot wire from reverse interval based the firewall to the cockpit was continued.

2. Improvement of isolating device was made so that reverse interval switch would give secondary protection. This would mean two faults initial of one would be necessary to reverse operation.

3. Third switch was added, independently of the others. Action on switch is initiated by the landing gear device when it triggers by the landing gear switch, which pulls the reverse solenoid to reverse position.

4. Safety bypasses were revised with arrangements allowing no single fault to cause reversal.

5. Isolation of the hot wire was extended by addition of electric contacts at several points.

6. Wiring of reverse solenoid was changed to make it a two-wire system after isolating the positive lead. Thus across the negative side of the switch was not grounded, and ground control had full range of the current. This arrangement provides vulnerability to inadvertent reversal of hot wires. To get a reversal automatically with the reverse system, would require a hot short to the hot lead and a negative short across to the negative lead.

7. DC & light tests were run to establish the probability of propeller reversal with the low pitch slope inoperative. Under low power conditions, aircraft vibration usually results in disturbing vibration sufficiently to cause the engine before propeller goes into complete reversal.

Propeller cells for the switch to be triggered when the plane is airborne during the climb, even at the landing gear. Micro switch should become grounded.

When the plane makes another landing, the switch would not be closed until wheel were on the ground—that would be the indicator could not be released in the position existing if the plane lowered. When the switch is closed the Micro switch could have acted at maximum, so that the throttle lock could be released at the same instant.

Larson explains that American is trying to get as much standardization as possible in the cockpit between its Douglas DC-6s and Convair 240s. Both types have the same direct rope throttles.

The American engineering plan, however, does not agree that early warning light advantage advanced by some other engineers throughout the development.

Phase III—longer term fixes.

1. Proposal for a relief valve arrangement in the linepath circuit and a blocking valve that can close were suggested by American to Hamilton Standard Division of United Aircraft Corp. in line with the relief valve principle proposed by Air Line Pilots Assn.

American considered it a clever job and a good design but after further study questioned the low pressure relief valve's merit in bringing about additional safety.

It was felt that the valve added nothing to already solved electrical problem and that no serious hardware problem was indicated.

However, the reverse isolation value of the current ratio had a trouble-free feature. A double action is involved that opens the ratio and closes a diode. The diode will act to keep pressure down even should the valve happen to malfunction.

But American engineers haven't closed their minds on the relief valve suggestion and are studying its possibilities further.

Recently, the airline and Civil Aeronautics Administration proposed another device designed to prevent reversal happening simultaneously on the ground.

This could happen from a bounces during a hard landing or when a grounded landing gear Micro switch would trigger the throttle reverse lock.

The proposal is to add a damping switch on the throttle lock circuit. The switch would be located on the main panel and would be sensitive to both a dot and a dash. It would be closed and opened at trim. This would leave the throttle selected and ready for reverse if an abnormal trim is detected.

Proprietary cells for the switch to be triggered when the plane is airborne during the climb, even at the landing gear. Micro switch should become grounded.

When the plane makes another landing, the switch would not be closed until wheel were on the ground—that would be the indicator could not be released in the position existing if the plane lowered. When the switch is closed the Micro switch could have acted at maximum, so that the throttle lock could be released at the same instant.

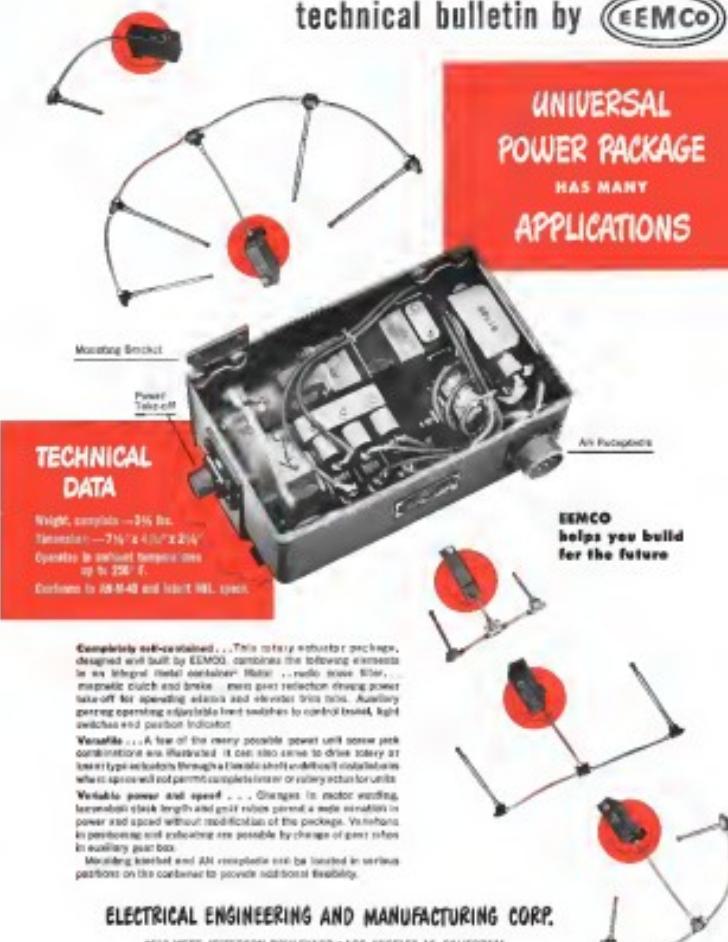
Larson explains that American is trying to get as much standardization as possible in the cockpit between its Douglas DC-6s and Convair 240s. Both types have the same direct rope throttles.

The damping switch is performed over but in alternative throttle lockouts at National, Boeing, and some other engineers are advocating because there is a problem of damping planes to fit the flexible systems of the Convair and the DC-6s.

There is another small advantage of damping switch installation: elimination of chattering of the throttle lockout as and off during takeoff due to the vertical "travel" of the landing gear.

technical bulletin by **EEMCO**

UNIVERSAL POWER PACKAGE HAS MANY APPLICATIONS



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U.S. Forces Take Bulk Of DH Beaver Output

De Havilland Aircraft of Canada, marking its 25th year of operations, has delivered 112 aircraft and will make single-engine Beaver planes during the Decade. Every last fiscal year, with the bulk taken by the U.S. Air Force and Army.

The seven-place liaison assault air force now by U.S. forces in Korea and in Europe, de Havilland says.

In an annual report on the fiscal year ending Sept. 30, 1953, the company says the DHC-1 Otter became the first single-engine aircraft to be approved under International Air Transport standards.

Profits for 1952 totaled at \$159,670 compared to \$455,046 during the previous year, de Havilland reports.

TWA Officers Boost Holdings in Company

Deutsche und Americaner owner of Trans World Airlines, Inc., acquired a total of 241,000 shares of common stock in the firm during the last two months of 1952, the Securities & Exchange Commission reports.

Hughes Tool Co., a mechanical concern purchased the largest amount, 220,000 shares, giving it a total holding of 476,041 TWA shares. In November, Albert V. Leder, a director, purchased 300 shares, a total common share holding. The following month, Wayne Lee Paxton, an officer and director, acquired 500 shares, giving him a total holding of 4,350 shares of common stock.

Additional transactions which have been reported to the SEC by aviation officials include:

- **AIR TRANSPORT, INC.** Deuter Trans Worldline owners purchased 4,000 common shares, making a total holding of 30,000.

- **AMERICAN AIRLINES, INC.** Robert W. Crandall, chairman of the board, bought 100 shares.

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HERE'S GOOD NEWS!

NEW TVOR

- increases plane take-down safety for any airfield
- changes "Voir-weather" to all weather airline service
- provides marginal weather landing by private and executive aircraft

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TVOR single omnidirectional
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aircraft is ideal for
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requirements. Private
planes have no their
own service

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To help aircraft manufacturers in their continuing war on metal corrosion, 3M developed EC-843—a sprayable coating that acts as a tough, flexible film which protects flat surfaces, joints, and even irregular metal spaces against the effects of corrosion.

See what extremes can do for you . . .

Perhaps you can use EC-845 in your operation? To learn more about it, and other 3M products designed for the aircraft industry, call in your 3M salesman. Or, write directly to 3M for a detailed booklet describing applications. Address: 3M, Dept. 113, 411 Pequot Avenue, Detroit 2, Michigan.



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ESTATE OF PAUL E. MURKIN - REPORT FOR TAXATION, HENRY TROXEL - IN CANADA FORM 10

ISSN 1062-1024 • VOLUME 25 NUMBER 10 • OCTOBER 2003 • \$10.00

PRODUCTION ENGINEERING

First Cutaways of Doman Rotor System

- Reveal detail makeup of four-blade copter unit.
 - Installation to be used on Bellman LZ-5 and YH-31.

These fast-rotor views show the fatal makeup of key parts in Dooce Helicopter's four-blade rotor system.

This rotor institution is used in the Denison LZ-5 and its military version, the YH-13, both now as the product of Civil Aeronautics Administration certification. Details of the copies were given in Appendix Wink's analysis.

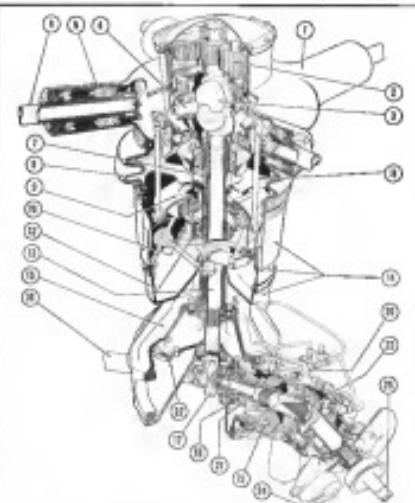
Jan. 7, 1952, P. 21
To Field Forces: The U. S. Army Field Forces, through Air Force procurement, have bought a service-test quantity of the YB-31. Initial flight of the prototype probably will take place sometime this month. Delivery of copies to the Army Field Forces probably will be made next fall, following GAT certification.

Features of the copilot's cockpit include 7-ft-wide sliding door opening for bulky cargo loading, cockpit location over the engine for optimum and aerodynamic stability, dual clutch rear gear shifting, all-pilot controls accessible with shoulder harness in use, interchangeable rudder blades, and tail rotor above mainail head height.

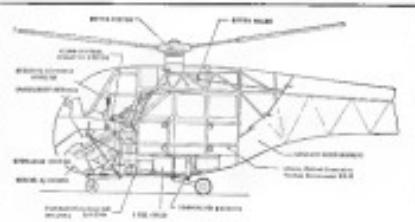
The other floor structure is a dual sheet floor beam with compartments to accommodate the fuel cells, the battery, electrical regulation, auxiliary fluid storage, landing gear torque shaft and also the datum for the engine ejection cooling system. On the forward end of the floor beam are fittings for attachment of engine mount and rear wheel struts.

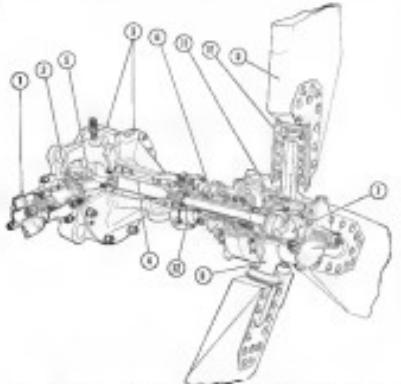
A twin engine rotary wing craft, also projected to use the Dornier motor system, is now under study for inter-
port and city-to-airport services.
(Aviation Week Nov. 16, 1952, p. 31).
This ship is now projected to employ
two 200-hp. Boeing 593 turbines in
place of a single 400-hp. piston engine.
► **Rotors**: Dornier-Dornier's rotor system
is a proved institution developed after
a long flight research program.

The bevelless rotor measures 46 in. in diameter, with an individual blade area of 18.4 sq. ft. Duct area at 1,800 rpm. It had a theoretical solidity ratio of 0.047. Rotor mass is 182.5 kilograms at



24, male immature; 25, female, with 2nd instar larva; 26, same female with 3rd instar larva; 27, same female with 4th instar larva; 28, male immature; 29, male, with 2nd instar larva; 30, same immature with 3rd instar larva; 31, same male with 4th instar larva; 32, female, with 2nd instar larva; 33, same female with 3rd instar larva; 34, same female with 4th instar larva; 35, larva collected.





TAKAHASHI HAMMER has model 2, 10-ton; 3, 20-ton; 4, 30-ton; 5, 40-ton; 6, 50-ton; 7, 60-ton; 8, 70-ton; 9, 80-ton; 10, 90-ton; 11, 100-ton; 12, 120-ton. (Takashi Hammer Co., Ltd.)

1,000 engine spec 1. Takeoff power loading for the L2-3 is 12.5 lb/lhp, for the TH-33, 11.05 lb/lhp.

The tail rotor is a smaller version of the main rotor.

Plane Plant Opened To Engineering Pros

Beech Aircraft Corp. is giving engineering students a hand-had look at the practical application of theory. Beech is making it easy, too, for them to see an aircraft factory in operation.

Beechcraft Engineers are used to fly college professors to the Wichita factory site in a company program to foster close cooperation between industry and education in the midwest. Beech made arrangements and helped in arranging their recruitment with the program.

The day-long tours allow students to see what else is involved in the construction of other aircraft. The crosscutting methods employed in a modern aircraft plant, give them a good idea of what industry requires from young engineers. The plan fosters personal contact between industry and educational schools and permits selection to become better acquainted with problems in aircraft production.

Recent visitors to the factory included education firms like University of Kansas, Kansas State College, Peoria

Spoon reduction graving is an integral part of the state fuel supplies. Existing oil is processed in all heating surfaces. Cover hoses provide access for inspection and removal of graving.

Art College and University of Wichita. Scheduled to be shown are the plant tour groups from universities in Oklahoma, Nebraska, Colorado and Missouri.

Titanium Sponge Output to Be Raised

Titanium sponge production will be boosted through new facilities being built at E. I. du Pont de Nemours and Co.'s Newport and Edge Moor, Del., sites.

Tiger is to produce an estimated additional 11,500 tons of the material during the next five years. Titanium sponge is the starting material for titanium alloys used in the construction of aircraft.

This expansion, undertaken at government request, will include at Newport a new manufacturing building, powerhouse, office building, laboratory, tankage building and storage house. Work completion is scheduled for the middle of next year. Work at Edge Moor will consist mainly of addition to existing facilities.

25-Ton Drophammer Built for AF Use

The first of eight 20,000-lb. class drophammers being built by Ross Foundry Co. for the Air Force recently was shipped to a manufacturer forging producer for steel turbine components.

Reportedly the largest of its type so far built in this country, shipping weight of the unit exceeded 800 tons. Installed, it stands 38 ft. above ground, extends 36 ft. below.

Company also is building a series of smaller hammers for forging turbine blades.

PRODUCTION BRIEFING

► Defense Manufacturing Co., Des Moines, is moving its headquarters into the company's new plant at Grand Ave. and Fourth St., West Des Moines. The firm manufactures fuel nozzles for jet aircraft engines.

► Lehman Steel Foundry recently opened a new Casting Dept. shop in Lehigh, Pa. The shop, capable of producing 180 tons a month of high-quality castings, will cast all jet engine rings presently for Wright Aeronautical Division of Curtiss-Wright Corp.

► Fries Manufacturing Co., Pasco, Conn., is building a \$1,250,000 aircraft parts plant at Newington, Conn. President Wilson L. Fries says the company's production of plane parts will be doubled in the 75,000-sq-ft plant.

► Consolidated Industries, Inc., West Chicago, Ill., has purchased the Tolson Tool Co., Franklin, Conn., in production of titanium and aluminum forged aircraft parts. The Tolson plant will be operated as a subsidiary of Consolidated.

► Hydro-Alloy, Inc., aircraft accessories manufacturer, has completed a \$1-million expansion of facilities at Binghamton, Calif. The new construction adds 122,000 sq ft to four years old Hydro-Alloy's four Bingham plants.

► Industrial Sound Control, Inc., Hurford, Conn., has bought a new 100,000-sq-ft plant at Rutherford, Conn., to increase output of jet engine mufflers and panels.

► Weber Aircraft Corp., Burbank, Calif., has received a major subcontract for production of Tencor Corp. aircraft seats to be installed in Navy F3H jet fighters.



heat for the HUP and the "Work Horse," too

Planned helicopter use in the news performing rescue operations as well as a variety of other tasks. Non-wearable feature of the HUP-2 is a hydronic hoist which can pick up as much as 400 pounds of cargo, or bring a patient into the cabin. Recent work, particularly, requires dependable cockpit and cabin heat. This and other heating requirements are met in full with Janitrol heating. V-26s aboard the HUP models, S-55s for the HH-3, and S-28s on the H-21 "Work Horse."

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SEAN Q-2 FIREBEE is launched from B-57 bomber and is tracked by two planes.



SPRINGED leaves its special launch chute after a flight, Q-2 soon hits the ground.

Drone Saver

- Q-2's parachute system recovers target jets.
- Equipment undamaged in numerous test drops.

Instant recovery of broken, high-speed jet target planes has been made possible through the joint efforts of Ryan Aerospaces Corp., the USAF and the Present F. Smiths Parachute Co.

Extensive trials of the recovery scheme—a two-stage parachute system—were conducted at Holloman Air Development Center during development of the Ryan Q-2 target jet drone.

First a simulated target duplicating the Q-2 in general structure and weight was used. Now, the Q-2 itself is being tested with the bomb bay of a Douglas B-57, dropped and put through all conceivable maneuvers. When it fails to pull out, the target drone is taken over by the chute system and recovered intact for reuse.

Never Conditions.—In the first tests, Ryan inflation qualified conditions were severe due to concentrated airspeed around the nose cone encountered in initial ascent. The chute system had to recover a maximum-weight test, traveling at maximum speed. But the real drama—the Q-2 begins to use fuel and loses weight the instant it is launched.

In the next extensive experiments, the test vehicle was launched by a simulated Q-2 flight with full fuel.

Operational Details.—The two-stage chute's main canopy weighs about half the weight of a conventional-deployment parachute of comparable size. It follows after release of a small lead chute.

The chute panels, from sheet to vent, are formed in the exact shape they take when opened. This requires the use of ten tension and ratio weights. The cloth is a lightweight, high-strength material.

Chute mouth is narrower than the outside diameter, to lessen the opening shock load. Both chutes are housed at the front of the aircraft section to minimize possibility of fouling.

A separate timer assembly releases the chute. The timer can be activated by the "booster pilot" who operates the remote control box on the ground, governing the target's flight. There is also a separate relay that can be operated from the remote control to release the chutes.

Operational Steps.—For takeoff, the small control drag chute contains a release automatically. Next, the drag chute flies out, bringing the first step deceleration to the Q-2. After an interval, the main chute activates to release and pull the aircraft by the drag chute, deploying the main chute from



CHUTE TEST VEHICLE is hooked up under B-57 wing. The chutes are in full blast.

a bag. The management is such that the responsive fins are drawn out below the parachute's canopy to deploy and collect.

The drogue chute is used immediately after the main chute activates. Ryan reports. The parachute recovery system has been accepted by the Air Force as suitable for the Q-2 payload plane and has been standardized.

Program Personnel.—Technical details of the test program were supervised by Ryan's director of engineering, Bruce South, and the Q-2 project engineer, Forrest Warren. W. S. Cochell directed the actual tests.

Wright Air Development Center personnel assisted Ryan engineers by providing design data, construction features and recommendations. The Air Force also supplied knowledge of required recovery techniques.

Paramount subcontractor personnel of the Q-2s have been made, with virtually

no damage to delicate internal equipment.

The chutes are reported to be of such durability as to permit repeated use without the need of repair or replacement. The main chute recovery system has been accepted by the Air Force as suitable for the Q-2 payload plane and has been standardized.

Program Status.—Technical de-

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Reports must be written in French. AFTTA will arrange for translation of the original in English, German, Italian or Spanish. For this service, payment must be received before May 1, 1953.

General subjects of the meeting are: Post-type designs and user protection; post-type production; non-production planning; manufacturing for mass production; tolerance, layout and quality control; and new trends in aircraft design.

Correspondence should be addressed to the secretary, Association Française d'Technique des Aéronautiques, 6, Rue Camille, Paris XVI.

IAS Summaries

Papers on helicopter, boundary layer, stick-slip and stability developments presented at the 11th annual meeting of the Institute of Aerospace Sciences are summarized on this page and page 20.

These summaries conclude a series Aviation Week began five weeks ago on the Institute's presentations.

Rotating Wing Aircraft

[Joint Session in Cooperation with the American Helicopter Society]

Effects of Attenuated Rotor Systems on Helicopter Aerostatic Control System Requirements. Charles W. Ellis, III, Test and Dev Eng., Kaman Aircraft Corp.

A theoretical investigation was carried out to determine the effect of attenuated ratios on the dynamic properties of a stabilized helicopter. The investigation is shown that any analysis of a high gain pitch rate stabilization scheme should include the dynamics of the system, it also indicated that the effect of such ratios depends on the type of system.

In connection with this investigation, an experimental program was carried out. Configuration of predicted and measured both capture distances reflected the nature of the unsteady motion of the helicopter and the corresponding rotor dynamics should be expected in high-gain attitude stabilization analyses.

Forward Flight Latency Stability and Flying Qualities. Members of the Tandem Helicopter, K. B. Astor, Flight Research Div., Langley AFB, Md., NASA.

Results of flight-test measurements and accompanying physical pictures of the forward flight in several different flying qualities are presented. The results are discussed in terms of the configuration investigated and analyzed. The conclusions are presented in the form of desirable flying qualities goals applicable to all types of helicopters. Comparison between theoretical analysis and experimental results indicate them to be a useful tool for making sense to achieve those goals.

Motorless Flight

Investigation of a Windmill Section Source for Boundary Layer Stabilization. Glenn D. Powers, Aerophysics Dept., McDonnell Aircraft Corp.

Studies of boundary-layer stabilization have pointed in the need for a reliable method having reasonably high efficiency and desirable variation of flow and surface pressure characteristics with speed. Various methods have been proposed, among them, the windmill section. The authors have shown on double-walled pressure variations with speed.

Theoretical and experimental studies were undertaken to determine the characteristics of the windmill section and to evaluate its performance as a boundary-layer power. The test type as designed was a windmill in which the section was passed rapidly through the tip of the low-blade and exhausted at the tip as the

FOUR-FOLD EXPANSION OF



This new burner test stand, located in the Andrew Willgoe Turbine Laboratory, is typical of the complex new facilities needed for turbine engine development.

EXPERIMENTAL FACILITIES

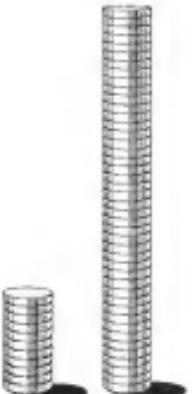
For New Aircraft Engine Development

TODAY, more than ever, high achievement in aircraft engine development demands tremendous experimental facilities. This is especially true at Pratt & Whitney Aircraft where engines of greater and greater power are being developed for the military and commercial needs of today—and tomorrow.

At the close of World War II, Pratt & Whitney Aircraft was the world's foremost piston engine builder. Naturally its experimental facilities were extensive. But today's broad program in the turboprop, turboprop and ramjet power plant fields has required an enormous increase in such facilities...at a dollar investment four times as great now as in 1945.

Our multi-million dollar Andrew Willgoe Turbine Laboratory, the most complete privately-owned turbine engine test laboratory in the world, is a major example of these post-war facilities. Here experimental jet engines or individual parts of engines are tested and developed under an infinite variety of temperatures and simulated altitudes. In the Willgoe Laboratory, and in more than a score of other new laboratories and test facilities, power plant designs of the future are explored and proved.

Constant expansion of experimental facilities is only one aspect of aircraft engine manufacture, but it illustrates an entire industry problem. It helps demonstrate, too, why—today as always—dependable engines take time to build!



The above chart illustrates the huge increase in Pratt & Whitney Aircraft's investment for experimental and test facilities from January 1945 to January 1946. In 1945, we built only piston engines. Today, our program also includes turboset, turboprop, and ramjet engines. The four-fold expansion covers only experimental and test facilities—it does not include additional heavy investments in new production facilities.

Pratt & Whitney Aircraft

MAIN OFFICE AND PLANT: EAST HARTFORD, CONNECTICUT

BRANCH PLANTS: NORTH HAVEN, SOUTHBOROUGH, MASSACHUSETTS

ONE OF THE FOUR DIVISIONS OF UNITED AIRCRAFT CORPORATION



wanted of a longitudinal pump. The type showed efficiencies in excess of 70 per cent.

Theoretical studies were also made of a windmill with an axial-flow, multiple-stage fan in the hub. This type indicates the advantage of eliminating the losses from the tangential velocity of the exhaust and the inefficiency of the thick airfoil required in the radial flow type.

Flight Measurements of Airframe Trailing Edge Aerodynamics on a Subsonic Aircraft Report, Aerophysics Dept., Mississippi State College.

This paper concerns an investigation made on an airplane equipped with a trailing edge surface slot that covers two thirds of the wing span. Special wing tips were installed and explored the pressure distribution. An experimental technique which was used to measure the locations and times for the opening on the flap square indicate which would yield a high suction pressure. The flap coefficient obtained was of an order that should have control in increasing trailing edge lift.

The data obtained in these tests, however, had no positive application to problems in progress. No improvement in the trailing edge was found, but was there any essential improvement in overall drag. The maximum lift coefficient was not increased by the slot, although the trailing edge was held open. Measurements of a fully developed distribution of suction showed the trailing edge that yielded a lift rate about 10 per cent of that developed by the ailerons.

Fast Writeoffs

Accelerated amortization for men, machines expanding their defense facilities is gauged by the amount spent in the form of certificates of account.

In the following list of recent contracts, temporary work is given, followed by product or service, cost of operation, how defined necessary for defense or peace, and the percentage of the expense that is allowed to be written off. Full cost will prevail, provided it can be demonstrated as follows:

* Davis Prop. Brothers, N.Y., aircraft maintenance parts \$11,155, 47%; * American Corp., New York, aircraft and engine parts \$11,155, 47%; * R. E. Olds Co., Lansing, Mich., aircraft and engine parts \$11,155, 47%;

* Curtiss-Wright Corp., Wood-Ridge, N.J., aircraft engines \$11,155, 47%; * Allis-Chalmers Corp., Milwaukee, Wis., aircraft and engine parts \$11,155, 47%;

* American Corp., Detroit, Mich., aircraft parts \$11,155, 47%; * Motor Power Maintenance Inc., Houston, Tex., aircraft parts \$11,155, 47%;

* Valley Aircraft Power, Inc., Pleasanton, Calif., military and civil aircraft parts \$11,155, 47%; * Loral Corp., Farmingdale, N.Y., aircraft and engine parts \$11,155, 47%;

* Miles Power Prod. Co., Waukesha, Wis., aircraft and engine parts \$11,155, 47%; * Allis-Chalmers Corp., Milwaukee, Wis., aircraft and engine parts \$11,155, 47%;

* United Machine Co., Inc., Philadelphia, Pa., machining of aircraft parts \$11,155, 47%;

* R. H. Aircraft Co., Inc., Pittsburgh, Pa., aircraft parts \$11,155, 47%; * Baldwin Metals Corp., Cicero, N.Y., aircraft parts \$11,155, 47%;



MT. WASHINGTON laboratory, where jet powerplants are put through



KING TRENDS in progress (above). Water spray rig is attached to inlet duct

Jet Engines Tested on Icy Peak

Four engine manufacturers are putting jet engines through intensive testing during trials in a natural laboratory on the frozen, windswept, 5,240-ft. plateau of Mt. Washington's Mt. Washington.

The park's test annex is operated jointly by the Air Force's Research and Development Command and the Navy's Bureau of Aeronautics.

A small test hangar on the mountain top is closest to the rock. The test annex, the year, wind speed ranges

from 75 to 310 mph, and it has been known to reach 1,900 mph. The test area has been as low as -65 deg F.

It took engineers several days to level the test annex and high mountain air at that thin peak. Most tests often begin when a plane is dropping from 6,000 ft. to its level at altitude. Therefore for a landing approach, engineers say, Ranting a jet on Mt. Washington wouldn't be conditions change.

Recently, two General Electric Air

AVIATION WEEK, March 5, 1962



CHAMPION SALUTES THE AIRLINES

for the best safety record in history!

The nation's airlines set new all-time records in passenger traffic and in safety of air travel for 1961. This is a magnificent tribute to airline maintenance methods and personnel.

It has been the privilege of the Champion Spark Plug Company through its engineers to work closely with the engineering and maintenance staffs of every major airline.

Whatever part Champion Spark Plugs have contributed to greater flying safety is attributable in large measure to the whalebacked cooperation of airline and aircraft engine manufacturing personnel with each other and ourselves. Nowhere is this more evident than in the annual Aircraft and Ignition Conference, sponsored by Champion, which has become the standard of the industry for cooperative effort towards a common goal.



CHAMPION and NICKEL are the trade names used for the most widely used and the most popular types of aircraft spark plugs.

CHAMPION SPARK PLUG COMPANY, TOLEDO 1, OHIO

TOMORROW'S AIRCRAFT: One step closer

Reducing weight
while increasing
structural strength

New materials with alloys are today overcoming one of the greatest problems that ever confronted the aviation industry . . . **increasing plane weight.** As faster and faster speeds were demanded, larger and more powerful engines required, stronger and heavier airplanes became necessary. But Westinghouse engineers had foreseen the difficulties that increases in body and engine weight would bring . . . and three years of metallurgical research and plastic studies had the answer—**Titanium and Mica.**

After successfully introducing the use of Titanium for jet engine parts, Westinghouse engineers decided their efforts to further its application. Today, a saving of over 200 pounds has been made possible in the weight of each engine. Still further savings are being attained with alloys of this miracle metal that boasts greater tensile strength, up to 135° F., than even stainless steel.

At the same time that Westinghouse was unfolding the merits of Titanium to the aviation world, their manufacture of Mica plate parts was proving almost equally valuable in reducing weight, while increasing structural strength. Research on this "lighter-than-aluminum" material and on its further use, other than items such as pads, cans, structural washers and assemblies, continues without a stop.

Reducing weight and increasing structural strength with these new materials are but two of the byproducts of aviation development under way at Westinghouse plants and laboratories the country over. Every day some new product, engine or material from one of the plants is announced . . . some new record is set . . . some new goal achieved. Every day nose and inner eye are turning to the name Westinghouse for promise of tomorrow's fast, safer, more economical air transportation. Westinghouse Electric Corporation, P. O. Box 566, Pittsburgh 20, Pennsylvania.

1000



Use of Titanium in jet engine components like this allows reduction in weight while retaining the desired strength.

THE SCOPE OF WESTINGHOUSE IN AVIATION

Airplane system components

External Engines, Fuel Control, Radios, Antennas, Communications Equipment and Electrical Systems

Ground equipment

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AVIONICS

Gavco Develops New Regulator

Rugged improved unit maintains constant voltage in small alternators, uses sealed plug-in subassemblies.

By Philip Klass

Govco Corp. of New York has developed a new electronic power regulator for aircraft alternators, which the firm claims has been used to maintain constant voltage in small alternators that supply power for windshield heating and radios on the B-47, B-45, B-52, C-97 and C-119.

Govco Building 10 prototype units for Navy evaluation, says one of its new Model 11RC-B regulators have accrued approximately 850 hours of flight test time at the USAF's Wright Air Development Center at Dryden.

The new Model 11RC-B weighs 25 lbs., roughly the same as the older 11RC and 11RC-B models at weight Govco has projected at 7,000 hours of flight test time.

The new model, however, employs hermetically sealed plug-in subassembly construction and, in addition, has several new operational features. These are:

- Over-voltage protection
- Automatic fault clearing
- Electrical "soft-starting" for bypass tubes

Operations—The Govco regulator is designed to limit its power system output as much as a small, small, single-phase alternator operates independently. Each alternator feeds its own separate power bus and loads. The regulator continuously controls all alternators' outputs to maintain a total current of 615 amp.

When alternators reach maximum from the preset value, the regulator automatically increases or decreases current drawing at the field winding of the alternator's engine, which in turn increases or decreases alternator field current to reduce the voltage to its original value. (The engine in a small d.c. generator drives from the alternator's rotor shaft that amplifier regulator output will control for use in the alternator's field winding.)

Performance—Govco says its new 11RC-B regulator will maintain alternator output (at steady state) voltage can meet over the alternator's 380 to 980 volt range with regulation:

• 2 Volts, from no load to 100% load

• 2.8 Volts, from no load to 175% load

The Govco regulator uses two thyristor-type tubes connected in a full wave rectifier circuit to control average cur-

rent flowing in the exciter field winding. Long point of the thyristors, which are connected in series with the exciter field circuit, is controlled by the magnitude of the alternator's output voltage.

The regulating consists of four major plug-in type job-subassemblies, each of which are hermetically sealed for protection against moisture. The reference working voltage between terminals is also a semi-conductor diode assembly.

Over-Voltage Protection—The new regulator has a built-in over-voltage detecting diode to protect equipment operating on the a.c. bus. If a voltage rise should cause the alternator voltage to rise to 150% for more than approximately 0.2 sec., the relay picks up and removes alternative current.

The over-voltage and alternative can be removed from service by opening a circuit breaker, if over-voltage still occurs, the regulator will again trip off.

Fault Clearance—It is a short-circuit current sensor in a.c. bus, it is desirable to try to "blow" the fault so that other components can continue to operate. When such a fault occurs on a bus fed by a single alternator, voltage drops sharply. Because the alternator regulator operates from this low voltage, regulator output (field resistance) falls, further reducing alternator voltage. This makes it impossible to burn out the fault.

If there is a second (independent) ac source, the failed bus regulator can be paralleled to the second alternator to obtain operating power. This enables the failed bus regulator to supply the large field excitation currents needed by the failed alternator if it is to be born out the fault.

The new Govco regulator is designed to switch automatically to a second a.c. source (if present) for its supply power in the event that a short circuit occurs across its own bus. If the fault is cleared promptly, the regulator automatically returns to its own a.c. bus for power if not, the reverse happens itself down. Govco says.

Electrical Conditioning—Govco claims the new 11RC-B regulator has electrical "soft-starting" when connected to an aircraft. This operation is either completely non-conducting or full-conducting. At the point where the gas in the tube ignites, there is a "hiccup" for 100 ms. One set of tubes under test reportedly lasted for 800 hrs.



NEW SURFACE VERSION of Govco's electronic voltage regulator, used to maintain constant voltage in small aircraft alternators.



IS CONSTRUCTED with hermetically sealed plug-in subassemblies to simplify maintenance and protect against moisture.



EVEN INTERCONNECTING wires (shown in multiple new areas) as printed in areas to be reconnected as a complete assembly.

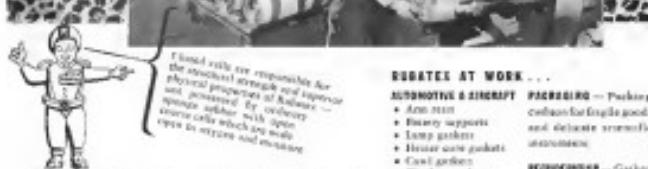
current high transient voltages that lead to produce thyristor life.

Govco says it has introduced "electrical conditioning" for its regulator that consists of a 0.02 microfarad (0.02 microfarad) network between the thyristor plate and cathode. As a result, Govco expects thyristor life to exceed 500 hrs. One set of tubes under test reportedly lasted for 800 hrs.

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Ground chamber forces atmospheric air bubbles out of RUBATEX.



Nitrogen, with all the substances of air without its harmful effect, is blown into "purified sheets" of rubber under a pressure of 3,000 psi. As is goes RUBATEX becomes very low density, closed cellular structure that shuns out oxygen, dust, moisture, and air as a barrier against atmospheric extremes.

These films of permanently sealed nitrogen bubbles give RUBATEX a superior and ever sponge and other soft rubber materials with open microcellular cells that are exposed to oxygen, the "bigboos" of rubber.

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RUBATEX CLOSED CELLULAR RUBBER





AIR FRANCE'S FLIGHT TRAINER

Curtiss-Wright recently has won an electronic flight trainer of the type anomaly package by Air France for ultimate training of pilots in original procedures. Air France, reportedly the first foreign com-

pany to buy such equipment in the U.S., will install the flight simulator at its Orly Field base, near Paris. Curtiss-Wright also has also sold two C-130 trainers, plus two sets of seven training courses.

► Navy Fighters to Get IBM Radio Frequency Control Units—Which provide transmitters of three AMPS and receive transmitters of four AMPS and go into Navy fighters for the first time, classifying the panel-mounted gyro computers. First RIM-7 antiaircraft missiles, fitted for the Douglas F4D and North American FJ-2, will use a new Sperry remote gyro computer, designated Type 82.

► GE Develops Remote Gyro Computer

—General Electric's solid-state panel-mounted gyro computer is being displayed by Navy officials to radio frequency indicators in its new fighters. In developed form, the unit does a complete gyro computing job, available to the RIM-7 antiaircraft system, which weighs about 20 lb., is at present under test at Naval Air Warfare Division, Philadelphia.

► Armor High in Top Defense Posts

—Edwin H. of the 100 companies which received the largest amount of military business since the start of the Korean war are in the munitions and electronics business. (See *AVIATION WEEK*, Jan. 26, p. 10). Eighty-three of 155 firms selected in the same survey "have been War II (Hughes Aircraft, now in the 12th position) and Celanese Corp., now in the 40th spot, lead the list of defense contractors in the top 100." Other newcomers: Hercules, Sybron, Minneapolis-Honeywell, Adelco, Gulton, and Mertec.

UNDER INSPECTION

Micromechanical inspection is used to ensure reliability of special paper varnishes tubes used in insulation, adhesives, and other aircraft equipment by Bredig America Inc. (Bredig Products Co., Calif.).

► Lockheed Buys New CRC Computer—Lockheed Aircraft Co. has purchased a new automatic digital computer for use in *Constitution* gear impact studies and for other airplane design

and extension induction of useful range, than 3.2 km., make radar installation rates likely to be concentrated in marine.

► MHI to Work on New "Hidoplug"—Minneapolis Honeywell, whose E-12 autopilot will be used on the Panavia Tornado and BUPF-2 bombers, is developing two more advanced, lighter-weight hi-dynamic autopilots. One, the MH-18, is sponsored by Panavia; the other, the E-21, is a Wright Air Development Center program. In both cases, the function will still include roll control, the maximum roll angle being angular cyclic control stick. A disengagement switch, servo stabilizer will initiate the cyclic control stick from servo control stations.

► Navy UHF Progress—Apparently 25% of Navy's aircraft are now equipped with new AMC-12 UHF communications set, replacing previously used VHF. Another 25%, now using VHF, have the necessary UHF wiring and equipment boards installed and are awaiting availability of UHF equipment. Navy spokesman says that UHF has given rise to some maintenance problems that were characteristic in using VHF.

► N.Y. ARTIC Expands Remote VHF's

—The New York Air Route Traffic Control center plans to install a remote VHF station at Newark, N. J., in order to obtain an operation of Scranton and Worcester, Pa. (AVIATION WEEK, Jan. 26, p. 30). Banquet VHF is rated for operation within 60 days at 188.9 mc., handling incoming traffic on Cessna 5 and Andre 9 airways.

► New Technical Bulletin

—Tech characteristics of General Electric's Type 1000 line of high-vacuum electron guns and vacuum tube sets are described in publication P-1000-A (Tech Dept., 1 West Road, Schenectady, N. Y. 12301).

► DCIIS Reliability in AF—Efficiency shift is measured in 21 different aircraft models, including 10 in the Boeing DC-10. (Gulfstream Electronic Catalog Dept., 411 West Ave. St., Los Angeles 51, Calif.)

► High-Tension Capacitors—of the compensated metalized paper type, capable of operating at temperatures of -15 to 121°C, are designed in two Avco Avtron units (Avtron, 100 Franklin Rd., Norwalk, Conn.). Magneto resistors, thermal resistors and thermal resistors, are listed as features available. (See *AVIATION WEEK*, Jan. 16, p. 12.)

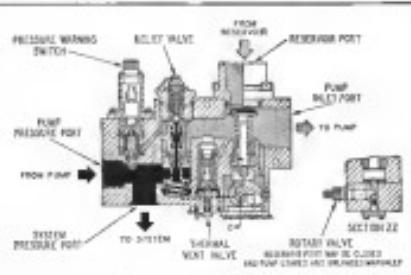
► FAKE landing computers, the *Bluebird* and *Yellowbird*, are described in a 16-page catalog by Bredig America Inc. (Bredig Products Co., Calif.).

► Copper cable insulation characteristics and applications are described as a new General Electric bulletin, CEA-009A (1 Main Road, Schenectady, N. Y.).

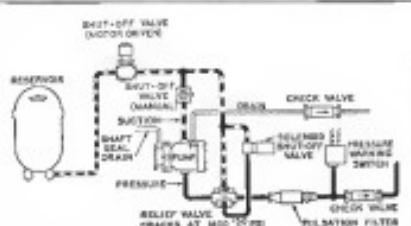
EQUIPMENT

New Valve Simplifies Hydraulic Systems

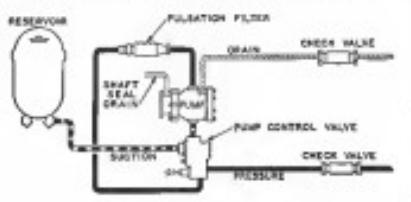
- One-body pump control cuts number of parts.
- Vickers unit developed for Super Connie.



INSTALLATION of Vickers pump control valve in late model Super Constellation . . .



CLEANS UP hose pumping circuit of airline's hydraulic system, showing . . .



REDUCTION of separate units and electrical controls needed by old version.



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Bridgeport, Conn.

LAS to Operate Big Idlewild Base

Lockheed Aviats. Service later national has signed a 20-year lease to operate a new \$2.7-million aircraft maintenance base to be completed this year at New York's Idlewild International Airport.

The project will be the largest independent aircraft maintenance base on the East Coast, covering 90,000 sq. ft. on a 25-acre area.

Constructed by the Port of New York Authority, the cantilever design longer AVIATION Week Feb. 9, p. 69) will reuse that space which is at present occupied by Lockheed at Idlewild.

LAS president J. Kenneth Hall says \$700,000 in immediate expenditures will be required during the first year, and an additional \$10,000,000 in improvements and new equipment will be installed in 1954.

► **Complete Facilities**—Five bays of 115 x 135 feet will be capable of housing the largest commercial air transports now flying or projected. Hall says C-130s and Douglas C-124s will cover \$5,000 sq. ft.

Pilot stops will take up 11 tons of the maintenance base.

The new installation will measure, modify, convert and overhaul commercial aircraft and corporate-owned planes.

The aircraft component and aerospace system design will include intricate radio and avionics, sheet metal repair, electrical, hydraulics, paint, welding and engine building.



M818 DIFFERENTIAL PRESSURE SWITCH

Specified by Boeing

Engineers for the Boeing B47

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Now in production, Aerotec M818 is vibration resistant up to 500 cps with a 1/2" amplitude. It is capable of withstanding surge pressures of 120 psi, without change in setting. Rated for 30 volts DC, it is rugged, inexpensive and reliable.

All M818 series Aerotec switches are available for use with Regal, oxygen, water, alcohol, carbon dioxide and hydrocarbons.

Through representatives, choose the engineering background and years of experience in the aircraft industry are ready to serve you and would welcome your inquiries.

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World's Busiest Airport Praises Gilfillan GCA Radar

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says Clarke L. Craft, Chief Airport Traffic Controller.



AN AIRPORT TRAFFIC CONTROLLER
MONITORING RADAR SCREENS
TO DIRECT AIRCRAFT MOVEMENTS

DEPARTMENT OF COMMERCE
FEDERAL AVIATION ADMINISTRATION
AIRPORT TRAFFIC CONTROL, Tower
Cleveland Hopkins Airport
Cleveland, Ohio 44106

DEPARTMENT OF COMMERCE
FEDERAL AVIATION ADMINISTRATION

December 6, 1962

Mr. Warren E. Miller
Project Sales Manager
Gilfillan Radar Corp.
12014 Temple Boulevard
Los Angeles 45, Calif.

BEST WISHES:

It was a pleasure to get your note, and I am most happy to forward a few comments regarding Gilfillan Model 100-1 and radar-1 to you.

The installation of radar at Cleveland Hopkins Airport was the biggest project ever taken on by Gilfillan. A typical airport, and especially American to our knowledge, of the usual instruments experiencing jams here, we average 800, plus or minus 1000 true reads to miles, of the approach and weather radar only. Of the 800, at 1000 feet above ground level, there are 1000 false reads, or noise, or spurious returns because our receiving gain is so high. The system has had and may have an average over 1000 false reads right off both of the sumps of one mile on surveillance runs, even though the transponders have been designed for that sparsity. The accuracy of the 100-1 is excellent, and the range is excellent, and the resolution is excellent, and the tracking is excellent. A few false alarms in location of controls in the 100-1 should be made with which, I'm sure you are familiar.

Again, very truly yours,
Clarke L. Craft
Chief Airport Traffic Controller

GCA 100

In GCA and Radar Research, Design and Production



Gilfillan
Los Angeles

NEW AVIATION PRODUCTS



1. The recorder can be expanded from a two-channel system to four or six channels by adding self-writing galvanometers and amplifiers as the need arises. The recording galvanometers cover a frequency response up to 100 cps. Chart paper can be operated at speeds from 1 cm/sec. to 625 cm/sec.

Edon Co., Inc., 207 Mass St., Worcester 4, Mass.

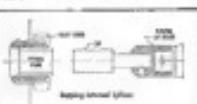
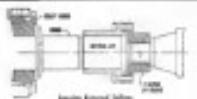
Isolation Amplifier

An isolation amplifier for aircraft, permitting selection at eight receiver outputs and three transmitter outputs, has been placed on the market by Avionics Accessories Inc.

The unit, Model A-100, also provides interphone service and a call station between all crew members. It allows any combination of the eight receivers and interphones to be selected without affecting the communications or selection of other crew members.

Model A-100, # weighs 30 lb., is a self-contained unit containing a microphone, headphones and a standard range filter to make it a complete installation. The unit is mechanically and electrically interchangeable with similar units in use.

Avionics Accessories Inc., P. O. Box 4078, Fort Worth 6, Tex.



Spline Finisher

A new method of honing (polishing) small shafts which is said to exceed where conventional techniques fall.

It involves the use of a toothed leg, which fits into the spline and rotates back and forth to produce a high finish.

This is the first of naturally used honing wheels, it develops, Michigan Tool Co. says.

The honing tools can be used with either the Michigan Model 945 or 950 standard gear honing machines.

Michigan Tool Co., 7171 E. McNichols Rd., Denver 16, Colo.



Recording Console

An expandable console for recording cockpit data has been announced by Edon Co., Inc.

The equipment includes a cassette recorder mounted on the desk-like console and amplifier (i.e., dc or transistor types) in a JAN rack or panel arrangement on top of the desk.

The recording console, called CD Series A, will record up to three channels after amplification and can be printed off. The system will not track Plexiglas and is not affected by oil, gasoline, chlorine and other solvents generally in use, the company says.

The product she may be used to protect aircraft components during storage and as a recording signal in aircraft engineering, machining and bonding of parts on



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AIR TRANSPORT

CAA Airport Aid Fund Is Budget Target

- Salary cuts also likely in paring of expenditures.
- But airways and facilities spending will not be hit.

By Lee Moore

Civil Aeronautics Administration air traffic and airport aid funds are prime targets of Commerce Department and Budget Bureau attacks seeking to reduce the \$3 billion expenditure proposed by former President Truman for Commerce Department agencies in fiscal 1954.

Budget officials find they may have to cut agency functions to make substantial savings.

Federal airports operation and facilities establishment are considered substantially reimbursable, because the own cuts may hit the federalized airport program, plus a new Washington Airport at Dulles, Va. Dulles airport, costing twice operation at similar airports, appeals from such as those standard to private firms, and safety inspections at less active airports. These are smaller items than the CAA's own budget, which discusses the CAA as permanent last, because airports are not subject east to military, whose spending increases.

Among the best solutions of salary and expense also are considered likely, but officials concede that heavy cuts of that type would impair some CAA functions, because it will take time for the new government management to "climatize" units.

► **Other CAA Cuts.**—The Administration is going ahead with the cut in the CAA's expenditure budget. The Maritime Administration does \$7 million toward new ship construction in 1954. Wright-Patterson's \$17 million is almost all in salaries, and reductions would bring greater financial benefits, unless and unless other vital dependent units, and their congressional supporters.

In the Bureau of Public Roads, the two largest items are \$12 million for dams and \$11 million for \$5 million for Interstate highway maintenance. In the Bureau of Standards \$9 million total new expenditures. The major item is \$4 million for research, testing and training.

Also difficult to reduce are running costs of \$20 million, \$17 million is earmarked for new CAA areas; \$10.5 million for CAA office and expense and

Proposed CAA Spending for 1954

(All figures in millions)

	Not yet controlled (from prior year end new authorizations)	\$385.1
Salaries and expenses	10.6	10.6
Establishment air navigation facilities	1.2	1.2
Tactical development	1.5	1.5
Operating Washington Airport	1.5	1.5
Construction Washington Airport	1.9	1.9
New Washington Airport program	1.4	1.4
Federal airway program	4.8	4.8
Marsh & Oper. Alaska Airport	1.0	1.0
Construction Alaska airport	5.3	5.3
Air navigation development	8.5	8.5
To Implement Contracts		
Establishment air navigation facilities	9.5	9.5
Federal airway program	36.1	36.1
Air navigation development	3.7	3.7
Total		\$134.8

\$5 million for federalized airport construction.

Cutting these CAA cuts won't be easy. But other Commerce agency executives who see difficult, and some as big as the \$113-million target within the CAA budget breakdowns.

Budget officials are giving closest scrutiny to the expenditure side of the budget. Expenditure decreases were spending. So the GOP Administration is going after them first.

► **Other Commerce Agencies.**—The Administration is going ahead with the cuts in the Commerce expenditure budget. The Maritime Administration does \$7 million toward new ship construction in 1954. Wright-Patterson's \$17 million is almost all in salaries, and reductions would bring greater financial benefits, unless and unless other vital dependent units, and their congressional supporters.

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the CAA says passing the \$105-million CAA salaries and expense cuts will surely will result more administrative functions.

Progress can made in CAA's budget already have reduced personnel. The official notes that maintaining any 24-hour shift operations, such as safety inspection at physical facility, the reorganization to some extent has been made in the CAA staff to keep the operations shifts responsible for one unit. This is because of the eight-hour shift, 5½-day work, annual vacations and sick leave days.

Each crew of major additional equipment is to a regular capacity at least one more man. CAA already is pared down to general manager on many of its essential services, an official says. Therefore, the Budget Bureau is told it probably will have to cut out whole CAA bureaus in the 10 percent allowable cuts in 1953-54 budget dollars.

PAA Switches to DC-3s

Failure of traffic to build up so far on existing routes as Pan American World Airways' Roanokeville-Tampa-Mexico City route has caused PAA to explore the 54-70 and Constitution jet jet in the run list October with 21 passenger DC-3s.

Flight frequency has been increased from four times weekly to a daily, except Sunday basis.

Common Stock Returns on Investment of Domestic Trunklines in 1938-52

	Average Stockholder Return (\$ Millions)	Percentage Per Year (\$ Millions)	Stockholder Return on Investment (per cent)
1938*	26.7	[-51.22]	49%
1939	26.9	2.6	15
1940	23.9	4.6	19
1941	48.9	4.9	8
1942	58.5	13.9	33
1943	73.3	12.3	15
1944	35.6	12.9	12
1945	32.9	16.5	15
1946	34.4	[-32.50]	[-9]
1947	32.0	[-20.25]	[-60]
1948	31.7	[-1.75]	[-5]
1949	35.6	10.5	15
1950	37.5	31.4	19
1951	21.9	6.5	22
1952**	35.8	31.6	15
Summary	\$109.8	\$109.2	9

* 1938 omits Colonial, Continental, Eastern and Northeast due to lack of complete data.

** 1952 omits Sept. 30.

Note: Returns for certificates in rounded amounts after federal income taxes and payments on preferred stock. This table does not include stock dividends, which would increase shareholder earnings if declared, since many retroactive paid-up rights by CAB were reported net in income but no addition shown in the surplus account.

Source: Airlines' reports to CAB.

the task of management should be one of *resolving* the development of traffic."

* Over-regulation of profits. "It appears as such that the right cost controls and efficient management which help to increase margins of profit are to be met only with the charge that profits are excessive, and are to be proved in the percentage of investment somehow deemed to be the magic percentage. It could be argued that the task of management should be one of avoiding cost control and safety."

* Confidence in management: writers that operate on a schedule. "If policies are such that a course of working at regulations finally will be rewarded by legislating the illegal, it could be argued that the task of management should be one of upholding the rules of the game whenever it seems expedient."

Mac Roberts and the domestic trunklines earned only 2.9% on their investment during the pattern period up to the end of 1951. He implied that CAB should have guaranteed enough profit so higher subsidies and less compensation for losses would not result in relations and pay adequate dividends at the same time.

"If we make a profit of \$12.5 million a year, this means it would take eight years' profit just to make up for the subsidies in airplane profits, not to speak of the need for funds to pay dividends to stockholders and put aside something for a rainy day," he said.

CAB members and officials realized that American Airlines stockholders have averaged a 16% annual return on their investment in the 11 years of CAB regulation. Stockholders in UAL, Pan Am, TWA, and American, at a gross, have averaged a 17% return since 1938, the CAB's first year, and an 8% return since 1945, with higher earnings over years reflecting three years of heavy losses.

Mac Roberts' speech was timed with CAB's announcement of a \$27.5-million net profit for 1952.

Some CAB critics also said the American attack might tend to subordinate most issues of a Republican cause to concern the States with the Interstate Commerce Commission, which regulates railroads and trucking.

The House Committee on Government Operations strongly urged re-enactment of an independent CAB.

Mac Roberts criticized CAB Inc.

* Too many competitive route certificates. "It appears as such that price management's review is holding up traffic is not only with the agency's decision that there is enough traffic to warrant instituting another airline service duplicating the service or services already there, it could be argued that American justified the new offensive

PNA Plans Buildup Of Alaskan Routes

Pacific Northwest Airlines, Inc., plans a major new route network along the 1,500-mile coast between Portland, Seattle and Anchorage via Juneau when it buys two secondhand DC-3s to join its two to six now operating on a daily round-trip flight to Anchorage.

With the additional aircraft PNA also will extend its inter-island service to Juneau, Yakut and Cordova. Pacific Northern, now flies from Kotka and King Salmon to Juneau through Anchorage with four DC-3s and a passenger Lockheed L-12, which services two airports which are too small for DC-3s.

Travel served by the airline is inhibited by 70% of the territorial population. Since it was organized in 1933, PNA has flown 335 million miles with only a facility.

Civil Aeronautics Board granted the U.S. Alaska route to PNA in October 1951.

That year the airline's total income was \$1,017. Not until its first 10 months of 1952 amounted to \$245,369.

United Opposes NWA Routes in Northwest

United Air Lines has enlisted an organization of a Civil Aeronautics Board consumer for Northwest Airlines similar between Portland, Seattle and Spokane without approving UAL Seattle-Spokane routes and flights east.

In objection filed with CAB recently, United says public benefit of a UAL Seattle-Spokane route and only could interfere with some of the NWA route proposed by CAB in western F. M. Riddle.

The consumer contends Riddle failed to recognize the importance of Spokane as one of the major cities of the West Coast and needed far additional service of competitive airlines.

UAL also objected to the consumer's recommendation for a Western Air Lines shuttle between Portland and Seattle, claiming need for the route was not supported by evidence.

Convertibleplane Group Plans Policy Report

The Air Conditioning Committee's new convertible policy working group has scheduled preliminary reports for the end of this month. ACC established the group last month [AVIATION Week Feb. 23, p. 76].

Proposed is to recommend a consolidated convertible policy for develop-

ment and regulation of convertible aircraft reports the end of this month will be:

- Background and historical. The Army research staff of Col. William B. Parker, chairman of the ACC group, will prepare a study of convertible development to date.

- Commercial outlook. Civilian members Richard Walsh of Civil Aviation Administration and E. B. Miller of Civil Aeronautics Board will report on airline and other commercial prospects of the convertible market, economic and legal problems.

- Technical. American Airlines' George A. Aldrich recently forecast a potential of 70 million passengers in the 150,000-mile military route system, assuming that an estimated 30-passenger convertible could be developed.

- Military use. The military members of the ACC group will meet independently that month to prepare an initial report on civil military applications of the convertible. Members are Col. Booker, Attns. Jr., Col. R. L. Long, Attns., Mrs. B. J. Wellman, USAF, and R. S. Kaelin, Navy.

- Government policy trends. The civilian members will report on the latest congressional bills of some other highly subsidized local service by CAB in that case study improvement in Central's traffic load factor problem.

- In operation. With CAB recently United says public benefit of a UAL Seattle-Spokane route and only could interfere with some of the NWA route proposed by CAB in western F. M. Riddle.

The consumer contends Riddle failed to recognize the importance of Spokane as one of the major cities of the West Coast and needed far additional service of competitive airlines.

UAL also objected to the consumer's recommendation for a Western Air Lines shuttle between Portland and Seattle, claiming need for the route was not supported by evidence.

Members at this monthly meeting will exchange their preliminary reports the end of this month will be:

- Background and historical. The Army research staff of Col. William B. Parker, chairman of the ACC group, will prepare a study of convertible development to date.
- Commercial outlook. Civilian members Richard Walsh of Civil Aviation Administration and E. B. Miller of Civil Aeronautics Board will report on airline and other commercial prospects of the convertible market, economic and legal problems.
- Technical. American Airlines' George A. Aldrich recently forecast a potential of 70 million passengers in the 150,000-mile military route system, assuming that an estimated 30-passenger convertible could be developed.
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- Government policy trends. The civilian members will report on the latest congressional bills of some other highly subsidized local service by CAB in that case study improvement in Central's traffic load factor problem.

Proposed will be recommending a policy on convertible promotion and regulation. Col. Parker and the ACC report will be minor to us but because other, like the Bell and McDonnell prototypes are scheduled to fly next month and the Skor 100 next year.

Proposed will be recommending a policy on management promotion and regulation.

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Col. Parker and the ACC report will be minor to us but because other, like the Bell and McDonnell prototypes are scheduled to fly next month and the Skor 100 next year.

The airline's original temporary certificate issued in 1938, but CAB deferred action on renewal decision until now. Central comes Oklahoma, north-



LOCKHEED SPEEDS SUPER CONNIE OUTPUT

Type of the record-breaking per Lockheed speed super Connie output. Typical of the record-breaking per Lockheed speed super Connie output. The first year production equal the total number of Connies built in the plane's 19-year history, says Lockheed president Robert E. Gross. Four different Super Connie types are in order, and total output will number more than 400 planes.

AA Calls CAB Rulings Political

Airline vice president says Board decisions are not based on fact; implies need for abolishing agency.

American Airlines' political attack on the basic concept of an independent board to regulate the government-financed airline industry has stopped. Carl Aviatrix.

American's vice president, Mac Roberts, in a speech before the Wings Club in New York, challenged the CAB record, alleging that Board members generally have decided issues publicly rather than on the basis of fact and hearings industry widest.

Mac Roberts implied that the Republicans may well consider rechartering CAB and amending its charter to give it authority to set air fares as well as regulate traffic flow.

* Opposes Tread-CAB members of both parties and top CAB staff officials told American that they could not understand the attack, because American has had well-made Board representation and regulation. Specifically it is that American favored the new offensive

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tra Tires and northeast Kansas area.

Central gets about \$1.5 million in sales each year, CAA estimates, with compensation pay amounting to about \$900,000 per year for carrying mail.

The Board denied Central's application to move its hub to another Wichita District at Oklawaha, Okla. People, Comptroller and Gadsden, Tex., and Winfield, Kan.

Central America Planning Own Airline

(McGraw-Hill World News)

Costa Rica City—Formation of a Central American airline, owned partly by the five member states, will be proposed before Congress next May as a meeting of the Organization of Central American States.

The new carrier would handle air service between Costa Rica and the four other member states—Costa Rica, Nicaragua, Honduras and El Salvador—and on international routes out of Central America.

No details of the proposal have been made public, but government sources here say the "basic concept has been accepted favorable, although reluctantly," by the other republics.

Central America is served internationally by Pan American World Airway, TACA International Airline and KLM Royal Dutch Airlines. The sources did not indicate whether airlines would be expand as the proposed Central American carrier or if the proposed Central American airline is formed.

Single Pacific Airline Is Urged for Japan

Latest development in the battle of various Japanese carriers for a share of the market is a proposal by Mitsubishi of Yokohama, Mitsubishi's idea that three applicants consolidate to form a big dog. The Japanese government plans to meet each airline yet (approximately \$2,777,778) and control 54% of the stock.

The three companies are Japan Air Lines, Japanese International World Airways, and Hanshin Air Co. (Aviation Week Oct. 5, 1952, p. 34). JAL operates Japan's domestic routes and has a contract with Transocean Air Lines for trans-Pacific operation. JIWA has 10 twin-engine Douglas DC-4s and a recent contract with Cathay Eastern Airways to be a contractor with KLM Royal Dutch Airlines.

Cathay Eastern vice president Fred Eaton told Aviation Week on his return from Tokyo that JIWA and IWA are amenable to a consolidation, but JAL, though it opposed JAL, which

already has exclusive Japanese government contracts and backlog for domestic operations, apparently considers its position strong enough to hold out for an exclusive trans-Pacific franchise.

Transocean Air Lines' Roger Duce has announced that JAL plans to start trans-Pacific service (operated by Transocean) to San Francisco with two DC-6s about April 15, changing the same date as October 1st of the International Air Transport Association.

Cargo Weight Boost Is Early Aim of TAG

Transcript Air Group says its weight association will ask the Civil Aeronautics Board next week to approve a 5% increase in authorized gross weight of DC-4, DC-6 and Constellation cargo flights.

The proposed weight boost probably was turned down by CAA despite strong support by airlines and the Aircraft Industry Assn.

The recently formed TAG has set up a Washington office, and manager L. R. (Mike) Buckley, former Lockheed cargo engineer, says a staff will be hired at the new house from a number of "outstanding" members of the Transcript Air Group a 720 Columbia St., N.W., Washington, D.C.

Australia Planning Jet Liner Airports

(McGraw-Hill World News)

Melbourne—Special provisions for the handling of civil jet transports have been made in place for new airports being planned by the Australian Civil Aviation Department.

These provisions were recommended by the Royal Commission on Civil Aviation, which found that present airport facilities do not adequately accommodate jet aircraft.

"In view of the limited number of planes utilizing present services, a reduction in their use will not abate," the commission reported.

The Royal Commission dropped Port Lincoln and Albany from its list of new airports for reasons of economy.

It recommended that the new airports be built at a cost of \$100,000 per acre, and that no more than 10% of the land be taken for roads, drainage, etc.

The Royal Commission also recommended that the new airports be built on land which is not likely to be required for future expansion.

Diagrammatic layout of seating arrangement United Air Lines planes for its new Douglas DC-7s and expected to get additional seats per row. The plane will be powered by four Wright Turbo-Compound engines.

run, and create extensive noise with jet plane operations, officials envision a problem which would obviate these difficulties.

► How It Works—For current fuel load, as they now do, but will tax up a map so a special loading spot fees. That map is to be level with the roof of the passenger lounge.

Data at this location engineers are cut off and the place called merely to clear room from the spine. With loading of passengers and freight completed, the aircraft comes down a ramp to the runway, at which point engineers are cleared without fear of injury to either passengers on the ramp or drivers of ground vehicles which is usually located in the area.

One map with nine aircraft passes can handle 200 loadings and take off, says Antonius Director of Aeroparts & Electronics.

To cut down time, officials plan to add an overhead ramp on level of the administration buildings.

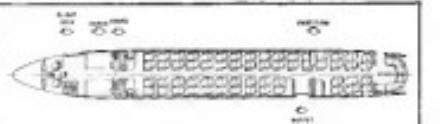
Frontier's Mexico Routes Are Renewed

Carl Antonius' Aeromexico Management Company reopens flights (with 10 aircraft) with Aeroflot Airlines. The Board granted the certificate extension "specificationally" until May 31, 1955, when Frontier's main route system comes up for annual recertification.

The Board stated that "continuation of Aeroflot's present service would cost the government about \$490,000 a year in mail air payout." The Board adds, "In view of the limited number of planes utilizing Aeroflot's service, a reduction in their use will abate," the commission reported.

The Board therefore dropped Puerto Lopez and Puerto Escondido from its list of other services. By 1955, CAA said, a final decision should be possible.

Frontier's total route subsidy for fiscal 1954 is estimated by CAA at about \$21 million.



SEATING PLAN FOR UAL'S DC-7

Diagrammatic layout of seating arrangement United Air Lines planes for its new Douglas DC-7s and expected to get additional seats per row. The plane will be powered by four Wright Turbo-Compound engines.

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AVIATION CALENDAR

"Bring Sacar" reports still pop up in press and letter to Aviation Week. Some Americans think the Avianaut can get his first Comet before the asteroid "late 1956." If the spacefaring crew can stay up its schedule. The Soviet, though, has just launched a high-powered propaganda campaign against reports of West German aircraft and airline interests coveting an F-104 for a military power base. In fact, both superpowers are now competing. Pruda is trying to convince the West Germans that their air industry can only be rebuilt with funds raised through loans, taxation, and by giving great power to former Nazi officials and monopolists.

Viktor Vassant now in Canada will not be brought to the states, it's scheduled for cold weather tests at Winnipeg and during trials at Montreal, conducted by TCA engineers. . . . Another Vassant may make a US tour later this spring. It probably won't be published in England but when Queen Elizabeth took over the left seat of the Cessna on her flight she perched the ship up to Mach 0. Comet's average range is 72 and maximum is set at 75, although Comets have flown at 85 without control difficulties. Every prediction is up to 80.

The aerospace strength shift in the U.S. is growing fast. An official of Corporation Aeronaut Defense says its members total 240 firms, which own more than 1100 planes, and that the average member has an annual operating budget (not cost) of \$200,000, or about \$45 per hour. He contends that at present defense procurement contracts and grants are not made by other means, although existing equipment requirements. "We can fly a bigger market for DOD equipment for example, than all the aircraft we've made," he says. The lead article in the Mar. 7 Saturday Evening Post, "Seven Who Suffered," was written by Lee Macrae, Aviation Week's managing editor. . . . Among many problems the new ASA administrator must tackle is replacement of a regional administrator notoriously unreliable.

One of the country's air safety authorities says NASA's series of costly fire tests will bring invaluable benefits, with much data already released to industry and military, and more to come.

Navigation air observers back from Korea have expressed opinion that the U.S. goes over fighter combat and endangers the job the crews of the old bombers are doing. However, Col. A. A. Ambrose, just back from six weeks in Korea to observe for Air Research & Development Command's Directorate of Assessments, says "I believe the fighter pilots are entitled to all the publicity they are getting. There is frequently more endurance, flying skill and courage involved in other types of warfare. For their courage, the pilots of the I-6 'Moondogs' don't have to wait for awards. They may do an assessment, have no means of defense, yet risk their life for long periods under constant and often heavy enemy fire."

Should medium-and輕型 aircraft now without airports consider building heliports instead to save heavy airport construction and maintenance costs? Jimmie Boddy, of the New York firm of aviation consultants, James Boddy, Inc., says they will start such a study this spring. . . . Luis Wills of CRA's Information Department in Washington has been assigned full-time to public and press relations for the controversial Office of Aviation Safety. Bill Conroy has, despite regional administration from Fort Worth, has been brought to Washington for three months to occupy the job of deputy director of OAS, recently vacated by William Davis. Louis Henklein, OAS director, told Aviation Week other field men will be brought in for two or three months each, after Conroy's stint. . . . Sixth Annual Aerofair, organized earlier this month, delayed roads competition by N.Y. City drivers of 538, and \$572 for the drivers of the trophy ticket. Motor in 159, and \$3518 on the same basis. . . . Texaco's T-55 Racers were through three races final from the other day, flying two, three, and 30 seconds respectively, all described by a company spokesman as successful.

In England ground mechanics' morale and discipline are beyond us by the Society of Licensed Aircraft Engineers, which associate virtually in a professional association. Such an organization here probably would be impossible, because of intense fears of competition. . . . Almost every British operator and industry spokesman these days speaks of the happy partnership between the nationalized transport corporations, the Ministry of Supply, and the aircraft industry. "This partnership is immensely good credit for the present lead in British civil jet development," writes Nat McFetrich, our British correspondent. The *Observer*

PICTURE CREDITS

1—Drew Johnson, Howard Energy Institute; McGraw-Hill World News, 31-32; Seminar Materials, Inc., 21-22; McGraw-Hill, 23-24; General Electric, 30-31; United Air Lines.

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EDITORIAL

The Executive Bottleneck

Consolidated Vultee Aircraft Corp. is preparing its men to take on bigger jobs.

The task of finding capable executives is necessary in many industries. In the aircraft field where it should be considered imperative, such training has been conducted mainly under nightmare conditions of frantic war emergency. Convair's Fort Worth Division, however, manages expansion of an executive development program that it started last year.

Convair is introducing an "intern" plan whereby obvious men will be moved to sit in an executive capacity during meetings to "explore areas of Convair management to overall division objectives, in the basic function and communications in which division actions are based, and to the approach taken to arrive at decision for each action," says August C. Eschenau, division manager.

Under this plan, observers invited to the meetings may be given special assignments by the executive committee.

Another phase of the development program will be initiated shortly when 11 men in positions of responsibility and ability will be rotated in their jobs so they can become familiar with various operations in aircraft manufacturing outside of their particular specialty. They will be given special training in communications, as well.

"In this day of specialization," Mr. Eschenau says, "we too frequently see people as become experts in our own little field and fail in understanding the broad, overall operation." This executive development program is aimed at correcting just that.¹

We commend the Fort Worth Division's modest plan, and hope it will be adopted and expanded throughout the company and elsewhere in the industry.

The mistakes and lessons of those awful days of World War II, when the industry was wondering at best how many more studies could be done, led to a research group from the Graduate School of Business Administration of Harvard. Their report, "Problems of Accelerating Aircraft Production During World War II," was published in 1946. These experts pointed out that top executives in major aircraft companies were "overwhelmed by day-to-day decisions and hence were unable to provide the necessary leadership."

As management gained experience in the operation of large test organizations, more decisions were made at lower levels and top executives were able to do more far-sighted thinking.

"Not until late in the war, however, were most managers able to anticipate problems and to set up definite programs to meet them," the report said.

The investigations found that "in a very real sense management problems . . . constituted the ultimate limiting factor on the peacetime aircraft industry's ability to expand during the war."

"These limitations were not so tangible and may be understood, say, as a shortage of plant space or of aluminum forgings, nor could they be satisfactorily measured. Nevertheless, when the companies were forced overnight into the vast wartime expansion, their could progress only

as fast as the upgraded and outside management personnel could learn their new duties.

"When the war forced the upgrading of most management personnel, it was found that many possessed abilities which had, up to that time, been unused and frequently unassessed. Everything considered, their performance was unsatisfactory."

The report advised specifically, among management problems which were described as producing bottlenecks, is "the failure to train industry personnel in positions to assume more responsible management positions." This failing factor, the specialists concluded, "could have been reduced by training courses for the lower ranks of management and by rotations of executives between various experiments in order to broaden their experience."

This, apparently, is what Convair hoped to do.

Airports, Life & Death

It probably surprised New Yorkers to learn from Howard S. Colgate, chairman of the Port of New York Authority, that Convair's two major airports alone, La Guardia and Newark, support 15,335 persons with pay rolls of \$35 million a year. By 1956 there will be 36,000 jobs, paying \$71 million. If Newark Airport is added, the 1952 employment total for the three is 36,414 and the payroll \$80 million. By 1956 there will be a total of 42,000 jobs, paying the citizens \$106 million a year.

These three "public utilities" seem also to keep quite a sizable number of citizens alive, don't they?

Bureaucratic Bungle de Luxe

Business Week magazine locates an editorial cartoon of "Bungling" at the Federal Communications Commission as far back as June 21, 1948, "working up its bureaucratic case" as an important application from industry.

The magazine's editorial said at this stage:

"Locally, nearly all of the questions revolve around the decision, the fact that the commission took almost two years to make a decision from the mosquito-like consideration that the commission and its staff as a whole are often subject to the welfare of business enterprises as apparently incompetent. That may easily be guilty on both counts. President Eisenhower's Administration is pledged to end that type of meddling indifference. It would be a salutary thing if the new Administrator were to waive promptly to make an example of the FCC and to instruct other regulatory bodies that their business is to regulate and not to rule."

The FCC is a piker in dawdling. We refer Mr. Eisenhower to Cord Aerospace Board. The poor work it re-opened all over again brought on the trans-Atlantic Middle East air cargo case. Seaboard & Western Airlines filed an application for that route just about 60 months ago—or five years and eight months back. A decision is still a long way off.

The radio industry is lucky.

F. E. Rohr Ministry of Civil Aviation on Feb. 11 approved an application of Avco, Ltd. (now incorporated) from Canada to its subsidiary British Aerospace Limited and the U.S. The decision came less than a year after Avco had filed its request.

—Robert H. Wood

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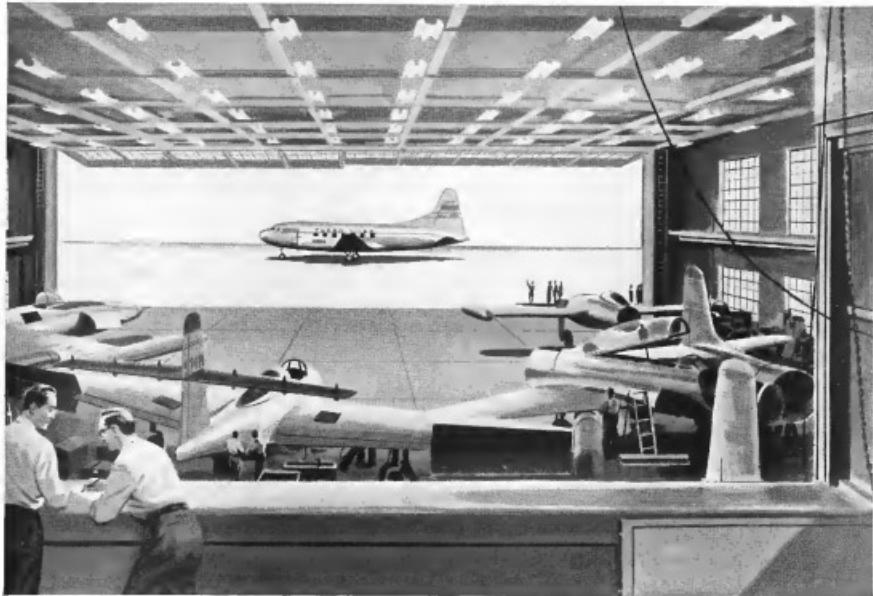
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